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EN ROUTE TO
SUSTAINABILITY



PRESIDENT'S MESSAGE

En route to sustainability

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En route to sustainability

In years to come, this decade will be remembered as one of the most critical decades in modern history. While geopolitical conflicts, economic upheavals and humanitarian crises grab the headlines across the world, there is another insidious battle we are fighting in the background and against the clock.

Climate change and unsustainable practices are threatening the future of our planet. We are not just experiencing intensified weather conditions, but increased risk to food security, habitats, livelihoods, settlement patterns and economies. Alongside these, we also face interconnected technological and social challenges that can have equal bearing on our collective future.

For us at NGC, sustainability has become the cornerstone of every business decision we are making. We believe we cannot plan for a future as a company if the actions we take to grow are endangering our tomorrow. We are not only searching for ways to make our business cleaner and more efficient, but we are investing in causes that have the same goal of sustainability in mind.

In this issue of *GASCO News*, we take a broad look at some of the matters that need regional attention, as well as some of the work we are doing in the sustainability space.



For example, we believe that a core pillar of any climate action plan must be the education of our youth - not only because their futures are at stake, but because they have the power to influence change, and will be the leaders making the important decisions in a few short years. We need to involve them early, we need to equip them with the right resources, and we need to challenge them to bring novel ideas and innovation to the table. This is the objective of the Re-Energize TnT programme - a joint initiative with Shell, to educate our students around climate action and give them an opportunity to engage with the problem. The programme has had commendable outcomes to date, some of which we share here.

On the environmental front, we shine a spotlight on two urgent issues. The first is the evolving impact of climate change on food production, and


what can be done to ensure changes in our biosphere do not compromise our ability to feed ourselves in future. The second is the matter of microplastics - a scourge that is not only affecting our oceans and marine life, but has implications for human health.

Of course, sustainability is about more than just the environment. To build a sustainable future for all, we need to focus on expansion of economic opportunities. The concept of Diversity, Equity and Inclusion (DEI) is one we need to integrate more thoughtfully into our businesses across the region, to support equitable participation of citizens in the economy and society. We also need to look at the development of alternative industries, to diversify our job markets and income streams. Culture is a rich resource we can develop and leverage in that regard, and NGC has been doing significant work to support that effort through our investments and partnerships.

As always, we hope that this issue gives some insight into our achievements this past quarter and our strategic focus as a business, as we work to support sustainable national development.



Edmund Subryan
President (Ag)



TOWARDS A GREENER FUTURE: HOW THE RE-ENERGIZE TNT PROGRAMME IS IMPACTING THE NEXT GENERATION

Estimated read time:







Moruga Secondary students install LED lighting at Basse Terre RC for their green initiative

KEY TAKEAWAYS

The Re-Energize TnT programme is an energy education initiative sponsored by NGC and Shell since 2021.

The programme has been making an impact among participants, as illustrated by student and teacher testimonials.

The National Gas Company of Trinidad and Tobago Limited (NGC) partnered with Shell Trinidad and Tobago Limited (Shell) in 2021 to implement a three-year energy education initiative - Re-Energize TnT. From the very beginning, this innovative programme has been making a positive impact in the lives of secondary school students in communities across Trinidad and Tobago, as they learn about energy efficiency and renewable energy. The programme was substantially completed at the end of 2024. The Cohort 3 Green Initiative will be implemented in Q1 2025 in the community of Couva by the third-

year overall winners - Couva West Secondary.

Re-Energize TnT was delivered by RENEW TT, an organisation that has carried out energy education training programmes across the Caribbean. The following schools were selected to participate in the programme:

- **Cohort 1** - Mayaro Secondary and Woodbrook Secondary
- **Cohort 2** - Moruga Secondary and Ste. Madeleine Secondary
- **Cohort 3** - Couva West Secondary and Success Laventille Secondary

The initiative comprised taught curriculum on renewable energy and energy efficiency, as well as practical

energy audits and community green initiatives. The content was certified by the Association of Business Executives (ABE) and included 15 training modules. Students who successfully completed all modules, meeting the attendance and performance requirements, received ABE certificates. Schools that won the Energy Star energy audit inter-school competition received a solar photovoltaic (PV) system that was installed at the school. The overall cohort winners, judged based on exams, participation and attendance, went into the Idea Incubator where they were guided through the ideation process to develop a green initiative to be implemented in the school's community.

Towards a greener future: how the Re-Energize TnT Programme is impacting the next generation | CONTINUED

RE-ENERGIZE TNT TRAINING MODULES

- The importance of energy
- Traditional (fossil fuels) and non-traditional fuels
- T&T’s carbon footprint
- What is energy conservation and efficiency
- Conducting an energy audit
- The Paris Agreement and T&T’s carbon reduction commitment
- Introduction to Renewable Energy
- Climate smart agriculture
- Introduction to solar energy
- Introduction to wind energy
- Introduction to biofuels
- The future of transportation: Electric Vehicles
- Advocacy and community mobilisation
- Presentation skills
- Stakeholder engagement



Idea Incubator in session.

| COHORT | ENERGY STAR WINNER | OVERALL WINNER | GREEN INITIATIVE |
|--------|----------------------|----------------------|---|
| 1 | Mayaro Secondary | Mayaro Secondary | Installation of 9V solar PV system at Mayaro Early Childhood Care and Education (ECCE) Centre |
| 2 | Moruga Secondary | Moruga Secondary | Retrofitting of lighting fixtures with LED lighting at Basse Terre R.C. Primary School |
| 3 | Couva West Secondary | Couva West Secondary | To be implemented in Q1, 2025 |



Students of Mayaro Secondary School proudly display their ABE certificates



Moruga Secondary students proudly display their ABE certificates

As the Re-Energize TnT Programme draws to a close, GASCO News spoke with some of the participating students and the teachers that supported them throughout the programme to garner their views on the impact the programme has had on them, their schools and communities. Their responses are summarised below.

"I feel very proud as a student, to give back to the community. Winning the competition allowed us to install a solar PV system at the Mayaro ECCE School as our green initiative. That will provide a good opportunity for the students and the community to look at the solar panels and learn about solar energy."

Denise Primus - Mayaro Secondary

"The quality of this co-curricular programme was of a very high standard and bringing it to Mayaro Secondary meant a great deal to our students and school. The training that students received in renewable energy and energy efficiency made them more conscious about issues concerning the environment. Going on to win the Re-Energize

TnT competition was truly a proud moment for us, boosting the confidence of our students and the image of our school.

Additionally, having a solar PV system at our school is a tremendous opportunity for our students to witness first-hand the harnessing of solar energy. We would never have been able to afford this on our own and therefore, to win this system has been truly worthwhile.

We are using the solar PV system in our teaching, for example, the form one students are learning about the parts of the system and their function. We have also started incorporating it in school-based assessments (SBAs). Now that we have a STEM club, we plan on expanding on the various ways to harness solar energy and other renewable forms."

Renee Dial - Teacher, Mayaro Secondary

"This programme meant a lot to me because I chose it for my extra-curricular activity. One of the most important things I learned in the

programme was that this country is a signatory to the Paris Agreement and that we are trying to reduce our carbon footprint. This knowledge has opened my eyes to the variety of ways in which we can use natural resources such as wind and sunlight to produce heat and light. I shared my knowledge with my family and my parents are actually looking into going fully solar and saving towards this. Now at my home, we practice taking off lights when not in use, unplugging appliances and washing large loads to save energy. I have also started thinking about a career in renewable energy - maybe solar PV installation or renewable energy engineering."

Nickole Kolahal - Ste. Madeleine Secondary

"I didn't choose this programme at first, but I wanted something more challenging where I would learn new things, so it was meaningful for me once I got into it. The knowledge I gained in the Re-Energize TnT programme changed me. By seeing examples of people who have gone off grid, I think if they can do it, I can do it too. I think we as citizens need

to think about energy more seriously and not waste electricity because when we waste energy, it has a ripple effect on other households and companies.”

Tyriq Williams - Ste. Madeleine Secondary

“The programme made me think about taking care of the environment and not wasting energy. I have started using more natural light, drying clothes in the sun and removing chargers from the wall when not in use. At home, we are switching to solar lights. The school is also changing as more students are showing an interest in solar power. One day when electricity had gone, the library was the only space with working lights because it is now powered by the solar PV system. That helped generate interest in the use of renewable energy in the school.”

Alfredo Seuratan - Moruga Secondary

“The Re-Energize TnT Programme has helped to change my mindset regarding energy consumption. For example, I am sharing my knowledge with my cousins and we’re doing what we can to conserve energy. I



Students take measures during energy audit

am interested in architecture for my future career and the knowledge I have gained in this programme will definitely be integrated into my future job.”

Katherine Charran - Couva West Secondary

“I loved the programme. It should be implemented in primary schools or be added as a subject because this knowledge is a way to save the

future. I learned about the different forms of energy and how renewable energy will be used more widely in the future. At my home, we have changed out our lights to LEDs and are switching off pumps when not in use, reducing grocery bags and recycling plastics.”

Alexander Giddings - Couva West Secondary

“I took over coordination of the programme a few months after it had started. However, in the short time, I noticed that the students became more outspoken and there was a vast improvement in their overall performance. Their awareness of developments in renewable and alternative energy in the real world also improved. The practical demonstrations such as the electric vehicle display was very impactful for the students. When the solar PV system is implemented, we look forward to using it as a teaching tool to continue the conversation about energy efficiency and renewable energy. I would recommend this programme to primary and secondary schools.”

Rachel Samai - Teacher, Couva West Secondary



Students are guided on energy calculations



THE RELATIONSHIP BETWEEN CLIMATE CHANGE AND FOOD SYSTEMS

Estimated read time:





KEY TAKEAWAYS

Climate change and food systems share an interdependent, reciprocal relationship with cascading effects on global economic, social and environmental development.

Current practices in livestock production and agriculture, as well as food waste and loss, contribute to global warming.

Systemic changes are required within the agricultural industry so that environmental efficiency remains at the forefront.



Climate change and food systems share an interdependent, reciprocal relationship that continues to produce cascading effects on global economic, social and environmental development. The United Nations

has declared a target for food security - Zero Hunger - as stated in its Sustainable Development Goal (SDG) #2. However, the availability, accessibility, utilisation and stability of food resources remains in a precarious position.¹ The

climate crisis continues to impact animal husbandry, land suitability, consumption patterns and the agricultural sector. Inversely, the declining health of food systems has worsened greenhouse gas (GHG) emissions.

¹<https://news.mongabay.com/2024/02/climate-change-extreme-weather-conflict-exacerbate-global-food-crisis/>



LIVESTOCK PRODUCTION

When assessing the various contributions to yearly GHG emissions, livestock production plays a significant role.

ACCORDING TO THE FOOD AND AGRICULTURE ORGANISATION (FAO), “WITH EMISSIONS ESTIMATED AT 7.1 GIGATONNES CO₂ EQUIVALENT PER ANNUM, **[THE LIVESTOCK SECTOR REPRESENTED] 14.5% OF HUMAN-INDUCED GHG EMISSIONS...**[WITH] BEEF AND CATTLE MILK PRODUCTION [ACCOUNTING] FOR THE MAJORITY OF EMISSIONS, RESPECTIVELY CONTRIBUTING 41% AND 20% OF THE SECTOR’S EMISSIONS”²

The global consumption of meat and dairy continues to increase as societies value the nutrients and protein of animal-based diets. In rural communities especially, livestock agriculture is instrumental for local farmers as “livestock support more than 750 million of the world’s poorest people.”³ As the world’s

population increases, so does the demand for livestock. This has compounded the effects of animal rearing on climate change, as land and machinery usage, as well as transportation and refrigeration of subsequent byproducts, have all proportionally increased.

Significant land space is required for livestock cultivation. Due to this, trees are cut down resulting in the release of carbon dioxide stored in forests and reduction of Earth’s capacity for air purification.

COWS AND SHEEP ALSO CONTRIBUTE TO NON-CO₂ GAS EMISSIONS IN THE FORM OF METHANE AND NITROUS OXIDE, AS THEY DIGEST GRASS AND EXPEL WASTE.

Additionally, the deterioration of the ozone layer has allowed pests and diseases to fester as the temperature rises. This has the rippling effect of worsening animal health – the quality of animal products is negatively affected, more livestock is required to compensate for declining quality, resulting in more resources being used. The FAO notes that “healthier animals are more productive and generate lower emissions per weight of product. Improving animal health

reduces emission intensity and enhances resource use efficiency by reducing mortality, and improving productivity and fertility.”⁴



FISHERIES HAVE NOT BEEN EXEMPTED FROM THIS HARSH CYCLE. IT IS DOCUMENTED THAT “SHRIMP FARMS OFTEN OCCUPY COASTAL LANDS FORMERLY COVERED IN MANGROVE FORESTS WHICH ABSORB HUGE AMOUNTS OF CARBON.”⁵ WHEN THESE MANGROVES ARE CLEARED, THE STORED CARBON IS RELEASED, THEREBY ENLARGING THE CARBON FOOTPRINT.

²Gerber, P.J., Steinfeld, H., Henderson, B., Mottet, A., Opio, C., Dijkman, J., Faluccci, A. & Tempio, G. 2013. Tackling climate change through livestock – A global assessment of emissions and mitigation opportunities. Food and Agriculture Organisation of the United Nations (FAO), Rome.

³<https://openknowledge.fao.org/handle/20.500.14283/ca8946en>

⁴Ibid

⁵<https://www.un.org/en/climatechange/science/climate-issues/food#:~:text=Food%20needs%20to%20be%20grown,and%20contribute%20to%20climate%20change>



AGRICULTURE

Agriculture naturally serves a critical role in the relationship between climate and food systems. Similar to cattle ranching, horticulture requires immense acreage to produce crops for global consumption. Deforestation not only directly contributes to failing GHG management, but it also makes grounds less secure, with heightened susceptibility to soil erosion, flooding and other natural effects. This thus hampers the fertility of the soil and threatens to destroy or damage crops. Aside from land use, there are various other agricultural activities that contribute to 10-12% of global emissions.

Non-CO₂ gases are emitted from “enteric fermentation, manure deposited on pasture, synthetic

fertiliser, paddy rice cultivation and biomass burning.”⁶ Increased temperatures and rainfall fluctuations have also influenced crop yield and nutrients, with “elevated levels of atmospheric carbon dioxide (CO₂) expected to lower levels of zinc, iron, and other important nutrients in crops.”⁷

DESPITE THE GLOBAL NORTH BEING RESPONSIBLE FOR 92% OF CLIMATE BREAKDOWN,⁸ THE RURAL DEVELOPING WORLD CONTINUES TO FACE THE BRUNT OF ITS EFFECTS ON FOOD SECURITY.

Small-scale farmers lack the technological and technical advancements to efficiently adapt their crop cultivation to climate

variability. This affects food security which in turn shapes the diet and health of labourers.

ACCORDING TO SOME RESEARCHERS, “THE MAIN CONCERN ABOUT CLIMATE CHANGE AND FOOD SECURITY IS THAT CHANGING CLIMATIC CONDITIONS CAN INITIATE A VICIOUS CIRCLE WHERE INFECTIOUS DISEASE CAUSES OR COMPOUNDS HUNGER, WHICH, IN TURN, MAKES THE AFFECTED POPULATION MORE SUSCEPTIBLE TO INFECTIOUS DISEASE.”⁹

Not only the crops and animals, but the labourers themselves are at risk due to increased incidence of diseases such as malaria and cholera.

⁶<https://doi.org/10.1038/nclimate2437>

⁷<https://foodsystemprimer.org/production/food-and-climate-change>

⁸[https://doi.org/10.1016/s2542-5196\(20\)30196-0](https://doi.org/10.1016/s2542-5196(20)30196-0)

⁹<https://doi.org/10.1073/pnas.0701976104>



FOOD WASTE AND LOSS

Undoubtedly, food waste and inefficient disposal have dramatically obstructed climate change mitigation efforts. According to the 2021 UNEP Food Waste Index Report, “global food loss and waste has a carbon footprint of 4.4 gigatonnes of carbon dioxide equivalent per year, and if it were a country it would rank as the third top emitter after the United States and China.”¹⁰

FOOD LOSS, OCCURRING IN THE UPSTREAM STAGE OF THE FOOD SUPPLY CHAIN, ALONG WITH WASTED FOOD AT THE DOWNSTREAM STAGE, RESULTS IN BILLIONS OF DOLLARS SQUANDERED GLOBALLY.

The FAO reports that “the cost of the food wastage carbon footprint in particular, based on the social

cost of carbon, is estimated to total \$394 billion in damages per year.”¹¹ The volume of food discarded is especially concerning when juxtaposed against growing global hunger levels.

Food loss and waste incur automatic environmental costs, wastage of water, land wastage, and rampant GHG emissions.

THE UNEP ESTABLISHES THAT “REDUCING THE DEMAND FOR FOOD PRODUCTION BY REDUCING FOOD WASTE (TOP OF THE HIERARCHY) IS A FAR MORE EFFECTIVE STRATEGY FOR MINIMISING ENVIRONMENTAL IMPACT THAN OPTIMISING END-OF-LIFE MANAGEMENT (BOTTOM TIERS OF HIERARCHY).”¹²

WHAT IS NEEDED

It remains clear that there needs to be a stronger global collective push towards food security and climate action. Policymakers and financiers need to systemise the agricultural industry so that environmental efficiency remains at the forefront.

Alternative protein sources and plant-based diets should be encouraged to reduce the proportion of carbon emissions attributable to livestock production. By amending both production and consumption patterns at the local and societal levels, food waste can also be minimised. It is imperative that communities unite to combat global warming, ensuring a straight path towards a Zero Hunger future. ■

¹⁰<https://www.unep.org/resources/report/unep-food-waste-index-report-2021>

¹¹Ibid

¹²Ibid

THE ROLE OF CULTURE IN SUSTAINABILITY

Estimated read time:  5 min







KEY TAKEAWAYS

There is increasing discourse around the linkage between culture and sustainability with a view to understanding how these concepts can be synergised to support sustainable development.

Scholars have suggested that culture should be a fourth pillar of sustainability, alongside the economy, environment and society.

Culture is important for defining and shaping identity and crafting the frameworks for social interaction and socio-economic wellbeing. Culture influences all aspects of society and is likewise influenced by societal changes. Sustainability is important as it ensures the present and future

viability of society, the economy and the environment. In recent years, there has been increasing discourse around the linkage between culture and sustainability with a view to understanding how these concepts can be best synergised to support the sustainable development of people and the planet.

For almost five decades, NGC has supported cultural preservation in Trinidad and Tobago. NGC also espouses the principles of operational sustainability, and in recent years the company has taken deliberate steps towards further embedding sustainability into all aspects of its business practices and stakeholder interactions.



The role of culture in sustainability | CONTINUED



Dragonzilla, mascot of the NGC Bocas Lit Fest

CULTURE DEFINED

Culture is a ubiquitous concept, of which most people have a perception, but may struggle to define. The General Conference of the United Nations Educational, Scientific and Cultural Organization (UNESCO) adopted the Universal Declaration on Cultural Diversity on 02 November 2001.

THE CONFERENCE REAFFIRMED THE DEFINITION OF CULTURE AS: “...THE SET OF DISTINCTIVE SPIRITUAL, MATERIAL, INTELLECTUAL AND EMOTIONAL FEATURES OF SOCIETY OR A SOCIAL GROUP, AND THAT IT ENCOMPASSES, IN ADDITION TO ART AND LITERATURE, LIFESTYLES, WAYS OF LIVING TOGETHER, VALUE SYSTEMS, TRADITIONS AND BELIEFS.”

From this definition, culture can be seen to have both tangible and intangible elements, which are integrated into the behaviours and norms of a particular group. The culture of a group defines and distinguishes it from other groups.

FOR EACH GROUP, CULTURE DESCRIBES ITS ACTIONS, MANNERISMS, AND VALUES, AS WELL AS THE ARTEFACTS AND SYMBOLS IT USES TO EXPRESS ITSELF.

THE LINK BETWEEN CULTURE AND SUSTAINABILITY

The UNESCO Declaration on Cultural Diversity alludes to the linkage between culture and sustainability and compares cultural diversity to biodiversity:

“AS A SOURCE OF EXCHANGE, INNOVATION AND CREATIVITY, CULTURAL DIVERSITY IS AS NECESSARY FOR HUMANKIND AS BIODIVERSITY IS FOR NATURE. IN THIS SENSE, IT IS THE COMMON HERITAGE OF HUMANITY AND SHOULD BE RECOGNISED AND AFFIRMED FOR THE BENEFIT OF PRESENT AND FUTURE GENERATIONS.”

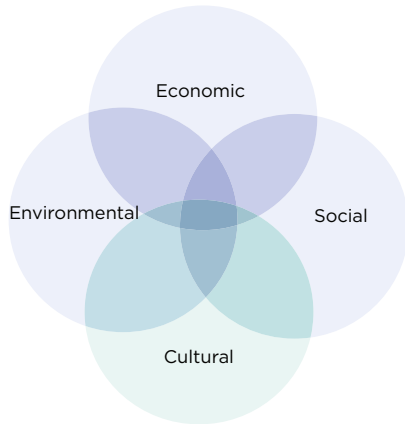
Soini and Dessein introduced a conceptual framework comprised of the following three representations of culture in sustainable development (Soini & Dessein, 2016), which can be used as a starting point for cultural and sustainability integration.

Culture In Sustainability

Sustainability is widely thought of having three pillars – economic, environmental and social. Soini and Dessein suggest that culture should be included as the fourth pillar of sustainability. In this model, culture is seen as capital possessing intrinsic value – culture for culture’s sake. It complements the other pillars but exists independently, with emphasis on the tangible aspects of culture such as art, literature and heritage sites. Culture ‘in’ sustainability acts as an enabler for economic, social and environmental sustainability.

This relationship can be seen in aspects of the ‘orange economy’ where culture is developed as a product for social and economic trade. The NGC Bocas Lit Fest, which has been sponsored by NGC for 13 years is an example of culture ‘in’ sustainability.

ON THE GREEN AGENDA



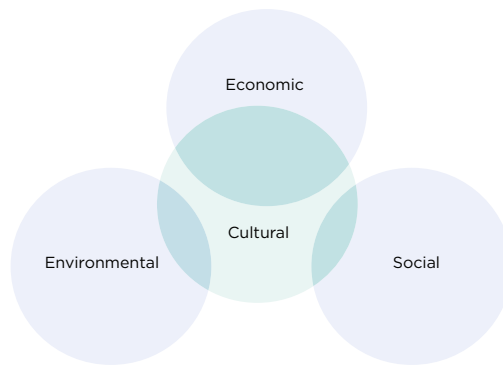
The festival grew from two award-winning writers in 2010 to 30 writers winning awards, book prizes or being shortlisted in the Caribbean, North America and the UK in 2023. The festival serves as a conduit for cultural development and preservation, knowledge exchange and career advancement opportunities for existing and emerging authors.

Other examples include the Tobago Blue Food Festival; the Tobago Heritage Festival; tours to culturally relevant communities such as Paramin; and of course, Trinidad and Tobago Carnival.

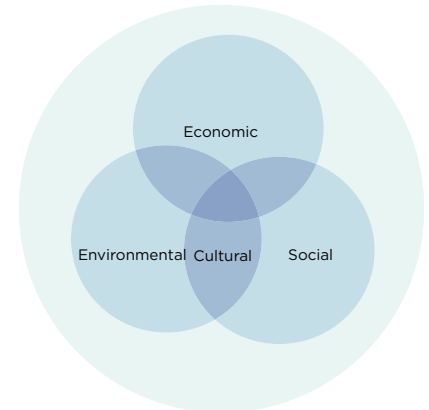
Culture For Sustainability

The second representation – culture ‘for’ sustainability – presents culture in a mediating role among the other three pillars of sustainability. Here, both tangible and intangible cultural resources are crucial for economic and social development. The implication is that cultural values should be considered in sustainable development policies.

CULTURE ‘FOR’ SUSTAINABILITY ALSO PLAYS A FOUNDATIONAL ROLE IN MAINTAINING PEACE AND SECURITY AS THE CULTURE IS CRAFTED IN LINE WITH SUSTAINABLE GOALS.

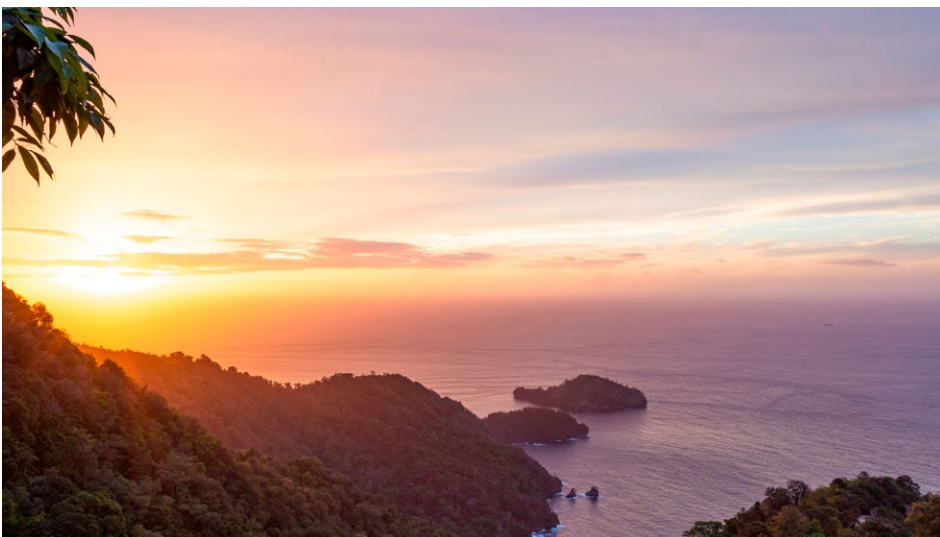


The advent of the local steelpan movement can be viewed as an example of culture ‘for’ sustainability. Having its genesis amid warring gangs, the culture of fierce yet friendly competition among steelbands emerged as a mechanism to achieve peace.



Culture As Sustainability

Soini and Dessein suggest a third linkage – culture ‘as’ sustainability – in which culture is fundamental for and fully integrated into the sustainability pillars. Under this structure, development is a cultural process, and society, the economy, and nature are constituent parts of the culture. Policy-making would be an integrated process that takes into account multiple dimensions.



View at The North Deck, Paramin, Trinidad and Tobago, W.I.

CONCLUSION

The choice of model employed to assess an organisation’s culture-sustainability relationship, will be influenced by the circumstances, values and goals of the organisation.

Culture and sustainability are complex and interconnected concepts that are always evolving, thus requiring dynamic monitoring and responsiveness. Integration of culture and sustainability has the potential to transform how organisations interact with their stakeholders, the economy, and the environment, as sustainability and the organisational culture become one and the same. ■

References

Soini, K., & Dessein, J. (2016, February 11). Culture-Sustainability Relation: Towards a Conceptual Framework. (M.-T. Albert, Ed.) MDPI, 8(167), 3.

MICROPLASTICS IN THE CARIBBEAN

Estimated read time:  5 min



KEY TAKEAWAYS

Increasingly pervasive in the natural environment, microplastics pose a clear and present danger to animals, plants and humans.

Sources include single use plastics, tourist activities, and improper and illegal dumping of waste.

The management of microplastics is a challenge being addressed in the Caribbean, with the impacts on the environment and human health the subject of ongoing research and studies.



When plastic waste is discarded into our environment, over time, the effects of natural processes (sun, wind and water) will break these plastics down into smaller and smaller parts. These microplastics (defined as fragments smaller than five millimeters) are now pervasive in our marine and land environment.

As microplastics are present everywhere, an increasing amount of these plastic fragments is also found in the formerly pristine waters of the Caribbean, where they pose a clear and present danger to animals, plants and even humans. Small island developing states in the Caribbean are reported to have disproportionately more microplastics than would be expected based on local consumption and population size.¹

SOURCES

Microplastics come from several sources, including synthetic textiles, dust, tyres, road markings, marine coatings, personal care products and engineered plastic pellets. For the Caribbean region, plastic waste largely derives from land-based activities, such as littering, as well as the products of improper waste disposal (dumping of unsorted plastic in planned landfills or unsanctioned garbage piles).

¹Lachmann Florina, Almroth Bethanie C., Baumann Henrikke, et al. (2017) Marine plastic litter on Small Island Developing states (SIDS): Impacts and measures. Göteborg: Swedish Institute for the Marine Environment, University of Gothenburg, report no. 2017:4.



Discarded single-use bottles, cups and containers



Runoff from rivers and storm drains



Improper waste disposal (dumping of unsorted plastic in planned landfills or unsanctioned garbage piles)



Fishing gear (discarded nets, lines)



Coastal tourism contributing to plastic pollution on beaches and in the water



Illegal dumping of plastic waste from ships

Sources of microplastics in the Caribbean are outlined in Figure 1 above.

In the sea, microplastics are transported by wind and ocean currents and distributed throughout the region, such that they are present in all Caribbean ocean environments, even those that appear untouched. These microplastics can be ingested by a wide range of organisms, from plankton to fish, leading to bioaccumulation and potential harm to the food chain. If not ingested, the toxic chemicals attached to microplastics can be absorbed by animals, which means that the microplastics still enter and become part of the marine food chain, with cascading effects. Even if not ingested or absorbed, microplastics act as vectors for contaminants,

transporting pollutants and pathogens throughout the marine environment, affecting Caribbean coral reefs and seagrass beds.

IMPACTS

Studies have documented the presence of microplastics in commercially important fish species, raising concerns about their potential impact on human health. For example, an analysis of queen conch confirms that microplastic pollution of the marine environment is ubiquitous in the wider Caribbean.² Economically, the Caribbean tourism industry is also at risk, as microplastic pollution detracts from the aesthetic appeal of beaches and negatively affects marine-based activities. More and more, animals — including humans — consume food containing



microplastics as part of their normal diets, with potentially deleterious effects on health and well-being. An act as simple as taking a sip of water has the potential to expose a person to countless particles of microplastics invisible to the naked eye. A significant percentage is also consumed through seafood.

²Dalila Aldana Aranda, Hazel A. Oxenford, Jairo Medina, Gabriel Delgado, Martha Enríquez Díaz, Citlali Samano, Víctor Castillo Escalante, Marion Bardet, Eve Mouret, Claude Bouchon, Widespread microplastic pollution across the Caribbean Sea confirmed using queen conch, *Marine Pollution Bulletin*, Volume 178, 2022, 113582, ISSN 0025-326X, <https://doi.org/10.1016/j.marpolbul.2022.113582>. (<https://www.sciencedirect.com/science/article/pii/S0025326X22002648>)



Over the long term, potential negative effects on health can include chemical contamination from toxins attached to microplastics and physical damage to internal organs through accumulation. While there is abundant evidence of contamination by microplastics, there is limited long-term research on the overall impact on regional populations. However, correlation suggests that effects of microplastics could include provoking immune and stress responses in humans.³

MANAGEMENT

The management of microplastics is proving to be challenging for the Caribbean, with the impacts on the environment and human health the subject of ongoing research and studies. How do we clean up this mess?

The Caribbean has not been idle, as there are ongoing efforts to mitigate and minimise plastic pollution, and thus the prevalence of microplastics. Beach cleanups and other community-based initiatives are a simple and popular way to reduce plastic waste reaching the oceans. Legislative options are also being used.

WITHIN THE CARIBBEAN, AS MANY AS 27 COUNTRIES AND TERRITORIES HAVE LEGISLATED OR PROPOSED SOME FORM OF POLICY CONTROL ON REDUCING THE USE OF PLASTICS OVER THE PAST DECADE.⁴

Locally, the Trinidad and Tobago government banned Styrofoam imports (but not local manufacture of Styrofoam) and have proposed legislation and standards around the use of plastics (Beverage Container legislation, yet to be introduced⁵, a proposed TTCS 9 standard⁶).

Additional solutions that are being implemented include increased research and monitoring programmes to track microplastic levels; continued awareness campaigns to educate the public about plastic pollution; global cooperation to reduce plastic waste; and finally, improved waste management systems. As part of this effort, the existing Trinidad and Tobago Solid Waste Management Company Limited (SWMCOL) is to be repurposed to become a Waste Recycling Authority.⁷



CONCLUSION

In conclusion, while microplastics are a serious problem, all is not lost. A combination of individual and community actions around the Caribbean aimed at reducing plastics use, reusing plastic, and recycling plastics in nontraditional ways (as bricks or as plastic planking) can all help. Addressing the issue of microplastics in the long term will require a multi-faceted approach involving additional Caribbean-specific research; monitoring of microplastic levels in the environment; mitigation measures; and ongoing public engagement to protect the Caribbean's valuable flora, fauna and human resources. ■

³Blackburn K, Green D. The potential effects of microplastics on human health: What is known and what is unknown. *Ambio*. 2022 Mar;51(3):518-530. doi: 10.1007/s13280-021-01589-9. Epub 2021 Jun 29. PMID: 34185251; PMCID: PMC8800959.

⁴Economic implications of the ban on single-use plastics in the Caribbean: A case study of Trinidad and Tobago | CEPAL

⁵Le Hunte says he will deliver Beverage Container Bill - Trinidad Guardian

<https://www.guardian.co.tt/news/le-hunte-says-he-will-deliver-beverage-container-bill-6.2.859670.2d0ba04d89>

⁶Understanding Biodegradable Plastics | TTBS (gottbs.com)

<https://gottbs.com/2023/12/01/understanding-biodegradable-plastics/>

⁷National Integrated Solid Waste Policy.indd (swmcol.co.tt)

<https://swmcol.co.tt/Portals/0/Waste%20Policies/National%20Integrated%20Solid%20Waste%20Policy%202024.pdf>



APPLYING DEI CONCEPTS TO CARIBBEAN BUSINESSES

Estimated read time:  6 min



KEY TAKEAWAYS

In the Caribbean's multicultural environment, DEI practices are critical for fostering equity and social cohesion.

Implementing DEI initiatives helps businesses attract and retain diverse talent, better represent their customer base, and create a positive organisational culture.

Strategies to effectively integrate DEI include training and education, inclusive leadership and hiring, and regular auditing and adjustment, inter alia.



Diversity, Equity, and Inclusion (DEI) have become vital considerations for businesses globally, including those in the Caribbean. DEI initiatives aim to foster diverse environments, ensure fairness, and create inclusive workplaces where all employees feel valued. Given the Caribbean's unique blend of cultures, races, and identities, integrating DEI concepts can significantly boost business

performance, employee satisfaction, and innovation.

THE IMPORTANCE OF DEI IN CARIBBEAN BUSINESSES

In the Caribbean's multicultural environment, DEI practices are critical for fostering equity and social cohesion. As highlighted by one source, "DEI is about creating

a safe and welcoming space for all groups, making sure that they receive equitable treatment and that they feel seen and heard."¹

Implementing DEI initiatives helps businesses attract and retain diverse talent, better represent their customer base, and create a positive organisational culture. It also serves to address historical inequities and contribute to more harmonious workplaces.

¹<https://republictt.com/republic-journal/why-diversity-equity-inclusion-dei-topic-conversation>](<https://republictt.com/republic-journal/why-diversity-equity-inclusion-dei-topic-conversation>)

TERMS TO KNOW

Understanding Bias

Whether conscious or unconscious, bias is a significant challenge to achieving equity in the workplace. Unconscious bias can manifest in hiring practices and promotion decisions, where managers may unintentionally favour candidates with similar backgrounds. Recognising and addressing bias is essential for creating a more inclusive work environment. Caribbean businesses should implement structured training to increase awareness of these biases and promote fair decision-making.²

The Glass Ceiling and the Glass Cliff

The "glass ceiling" refers to the invisible barriers that prevent women and minorities from advancing into leadership roles. Despite being qualified, many of these individuals struggle to reach executive positions in Caribbean organisations. The glass cliff, conversely, is the phenomenon where women or minority leaders are more likely to be placed in high-risk leadership roles during times of crisis, increasing their chances of facing failure.³ Recognising these challenges is crucial for Caribbean businesses to ensure that leadership opportunities are equitable and that diverse leaders are set up for long-term success.

The Diversity Bonus

One of the most compelling arguments for investing in DEI is the "diversity bonus."⁴ This concept refers to the improved performance and innovation that diverse teams achieve compared to more homogeneous ones. Diverse groups bring different perspectives, fostering creativity and more effective problem-solving. For Caribbean businesses that operate



across culturally varied markets, this diversity is an asset that can lead to increased customer satisfaction and market reach.

CHALLENGES IN IMPLEMENTING DEI IN THE CARIBBEAN

There are challenges associated with implementing DEI in the Caribbean, including entrenched cultural norms, limited resources for small businesses, and a lack of DEI expertise among leaders. One of the more recent obstacles to DEI implementation is the global DEI backlash.

In recent years, DEI initiatives have faced significant backlash in various global markets. Critics argue that these programmes often rely on hiring quotas, result in perceptions of diversity tokenism, and can create a polarised work environment if not implemented thoughtfully.⁴ This resistance has affected industries worldwide, including the travel sector, where companies have faced lawsuits challenging their DEI efforts.⁵

For Caribbean businesses, these global challenges present a unique set of implications. The backlash can make it difficult for local companies to sustain their DEI initiatives, as the international critique can shape regional perceptions. Caribbean businesses, which may already struggle with limited resources, might find it harder to justify continued investments in DEI amidst skepticism. This external pressure could deter stakeholders and reduce the momentum for DEI as a strategic priority.

However, this environment also presents an opportunity. Caribbean companies can differentiate themselves by focusing on

embedding DEI within their core values and aligning it with regional cultural contexts and needs.⁶ This approach can help companies navigate the backlash while maintaining a commitment to inclusivity and fairness.

DEI STRATEGIES FOR CARIBBEAN BUSINESSES

To effectively integrate DEI, Caribbean businesses can consider the following strategies:

1. Tailor DEI strategies to the local context:

Caribbean businesses must tailor DEI strategies to fit their specific cultural and socio-economic contexts. This may involve addressing historical injustices, such as the marginalisation of indigenous and other ethnic, social, or religious groups, while addressing contemporary issues such as gender-based discrimination in the workplace. A one-size-fits-all approach is unlikely to be effective in the region, and businesses should work closely with local communities to understand their unique needs and challenges.

2. Education and training:

Providing regular education and training on DEI principles is crucial for raising awareness and promoting inclusive practices. These programmes should be designed to address unconscious biases, promote cultural competency, and teach conflict resolution skills. In the Caribbean, where inter-ethnic tensions can still flare up, training that emphasises respect for diversity and collaboration can play a key role in preventing workplace conflicts and fostering a more inclusive organisational culture.



²<https://www.techtarget.com/searchhrsoftware/definition/diversity-equity-and-inclusion-DEI>

³<https://online.usc.edu/news/what-is-the-glass-cliff-and-how-can-we-avoid-it>; https://www.researchgate.net/publication/310799724_The_glass_cliff

⁴<https://www.forbes.com/sites/juliekratz/2024/08/25/dei-backlash-4-legitimate-concerns-to-avoid/>

⁵<https://www.travelweekly.com/Travel-News/Travel-Agent-Issues/Shifting-landscape-of-DEI-in-travel>

⁶https://89616578/Diversity_Equality_and_Inclusion_in_Caribbean_Organisations_and_Society



3. Promote inclusive leadership:

Leaders should be trained in inclusive practices to set a positive tone for the organisation.



4. Create safe spaces for dialogue:

One of the best ways to ensure that employees feel included is by creating safe spaces where they can voice their concerns and experiences. Businesses can implement employee resource groups (ERGs) or host town hall meetings to encourage open dialogue on diversity issues. This allows employees to feel heard and involved in the DEI process, and it helps organisations identify areas for improvement.

5. Create a DEI Task Force:

Establishing a dedicated group to oversee DEI initiatives can ensure accountability and provide a clear focus on goals.

6. Adopt inclusive hiring practices:

Practices such as blind recruitment can minimise biases in the hiring process.



7. Measure DEI progress: Regular audits and employee feedback can help track progress and adjust strategies as needed.

CASE STUDIES OF SUCCESSFUL DEI INTEGRATION

1. The Financial Services Industry in Trinidad and Tobago⁷



Several financial institutions in Trinidad and Tobago have embraced DEI, recognising its importance in both talent management and customer service. One bank launched a mentorship program for women aspiring to leadership positions, addressing gender disparities within its workforce. By focusing on mentorship and professional development, the bank not only improved gender diversity but also increased employee satisfaction and retention.

2 Tourism and Hospitality in Barbados⁸

The tourism industry in Barbados has seen growing efforts to address diversity and inclusion, particularly concerning LGBTQ+ travellers and employees. Several resorts have adopted inclusive policies to attract a broader range of customers, recognising that diverse clientele can significantly boost profitability. By aligning DEI efforts with customer service goals, businesses in the tourism sector have enhanced their global competitiveness.

CONCLUSION

As DEI becomes a global priority, Caribbean businesses have the opportunity to lead by example, showing how these concepts can be effectively integrated to take advantage of the diverse multicultural markets they serve. Although the path to effective DEI may present challenges, the long-term benefits make the effort worthwhile. ■

⁷<https://www.pwc.com/cb/en/case-studies/library.html>

⁸https://www.academia.edu/89616578/Diversity_Equality_and_Inclusion_in_Caribbean_Organisations_and_Society



NGC GROUP QUARTERLY HIGHLIGHT REEL



COMMERCIAL AND OPERATIONAL HIGHLIGHTS

- NGC, through its subsidiary NGC E&P Investments Limited, signed an Exploration and Production (E&P) Licence with the Ministry of Energy and Energy Industries (MEEI) for a 20% non-operated participating interest in the onshore Rio Claro block. Primera Oil and Gas Limited (a wholly owned subsidiary of Touchstone Exploration) will be the operator of the block. The award of a participating interest in this block aligns with NGC’s strategic objectives to proactively pursue opportunities that advance the development and monetisation of Trinidad and Tobago’s natural gas reserves, both onshore and offshore.



- The NGC Group won two awards at AMCHAM’s 14th Annual National Excellence in HSE Awards, held on 11 November 2024 at the Hyatt Regency hotel, Port of Spain:

- NGC copped the HSE Evolution award – The award category recognised changes made to fundamentally enhance the HSE system performance of the organisation in a transformational manner.
- National Energy took home the Outstanding OSH and Environment Project Award, for work that resulted in

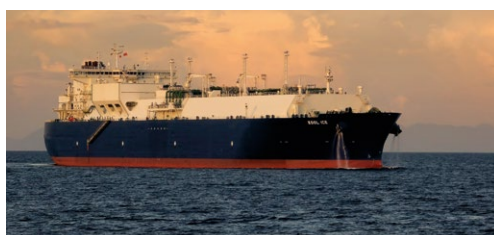


significant and sustainable improvement in the company’s Health, Safety, Environment, and Employee/ Stakeholder Wellness.

- The Group’s efforts to support its employees were recognised by the Human Resource Management Association of Trinidad and Tobago (HRMATT):

- NGC was adjudged winner of the HRMATT award for HR Regional Champion (Organisation). NGC was recognised for its dedication to building a supportive workplace through the deployment of a robust wellness and engagement programme that prioritises employee well-being.
- National Energy won HRMATT’s Coreen Jones Award for the Best Place to Work.

- For the nine months ending 30 September 2024, Trinidad and Tobago NGL Limited (TTNGL) posted an after-tax profit of TT\$82.8 million, up from TT\$32.7 million over the same period in 2023 – a remarkable 153.2% increase. This equates to earnings per share of TT\$0.53, reflecting an impressive growth of TT\$0.32 compared to the prior year.



- NGC shipped its first two cargoes of Liquefied Natural Gas (LNG) from Atlantic’s Trains 2 and 3 since the commercial restructure of Atlantic in December 2023. The shipments left Atlantic’s facility in Point Fortin on 30 November and 6 December 2024, bound for Italy and Egypt respectively.

LEADERSHIP COMMUNICATIONS AND STAKEHOLDER ENGAGEMENT

- Gastech 2024 was the largest energy exhibition and conference for natural gas, LNG, hydrogen, climate technologies, and low-carbon solutions. The conference took place in Houston from 17 September to 20 September, 2024. Ms. Verlier Quan Vie, Vice President, Commercial, NGC participated in the Gastech Panel titled 'The New Latin America LNG Export Wave'.



- NGC was paid a courtesy call by His Excellency Rashad Intigam Oglu Novruz, Ambassador of the Republic of Azerbaijan to the Republic of Trinidad and Tobago on 17 October 2024. The courtesy call formed part of the Ambassador's itinerary as he sought to meet with key national stakeholders during a brief visit to the country.



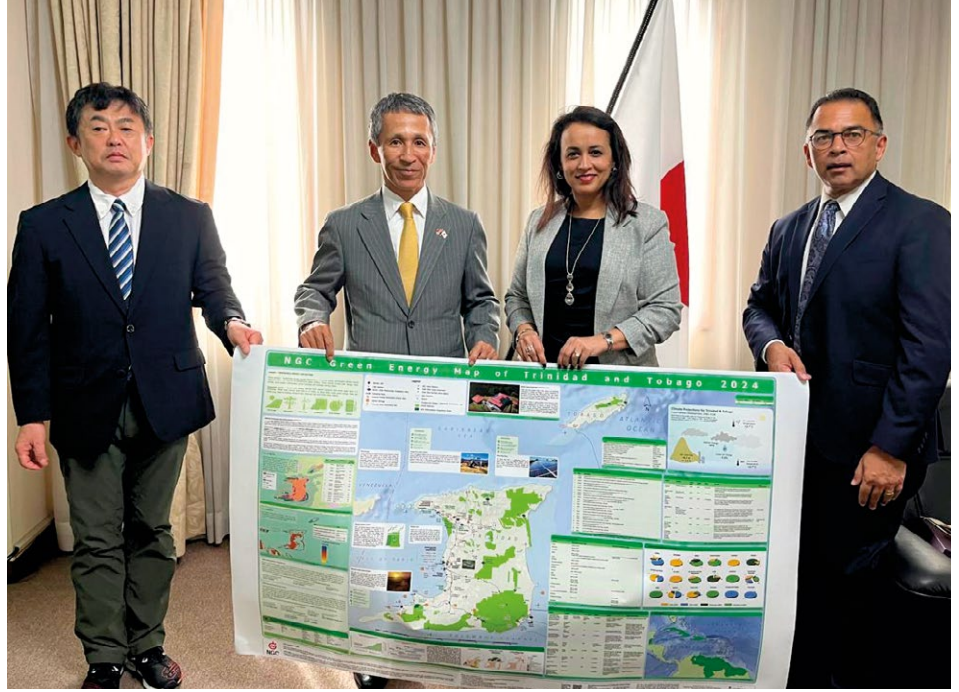
- In October, National Energy welcomed a delegation from Staatsolie Maatschappij Suriname N.V. The visit followed the

signing of a Memorandum of Understanding (MoU) for joint sustainable energy studies and a Letter of Intent (LoI) for

capacity building and knowledge exchange at the Suriname Energy, Oil & Gas Conference earlier this year.

GREEN AGENDA

- Green and sustainable energy practices were among the many topics on the agenda when Mrs. Toni Sirju-Ramnarine, President of NGC Green and His Excellency Matsubara Yutaka, the Japanese Ambassador to Trinidad and Tobago, met on 9 October 2024 in Port of Spain. The discussions highlighted NGC Green's commitment to advancing clean transportation fuels, renewable energy solutions, and alternative fuels.



- NGC Green Company Limited (NGC Green) was proud to co-sponsor the launch of Barbados' Rum and Sargassum Company's first bio-compressed natural gas (bio-CNG) vehicle, powered by sargassum, blackbelly sheep manure, and rum distillery wastewater. The event named

'Test Drive Zero' took place at Guinea Plantation, St. John, on 17 September 2024. During the event, bio-CNG powered a generator that charged an electric vehicle, showcasing its potential for sustainable transportation and electricity generation.

CSR AND SUSTAINABILITY

- NGC was pleased to sponsor the 28th National Youth Awards, which took place on 19 September 2024. The annual event is hosted by the Ministry of Youth Development and National Service to recognise the exemplary work being undertaken by young individuals and youth organisations throughout the country.



- NGC was proud to sponsor two prestigious awards at the Trinidad and Tobago Chamber of Industry and Commerce (TTCIC) Champions of Business Awards 2024 — the Green Agenda Award and the Business Hall of Fame Award. The awards ceremony, themed 'Visionaries and Vanguarders', recognised entrepreneurs and company owners for their contributions to the economy and national community.



- National Energy awarded top students at The University of the West Indies' Faculty of Engineering 2024 Prizes

and Awards Ceremony. The Company sponsored the awards for the "Student with the Best Sustainability Research Project"

and "Best Overall Student" in the MSc Chemical and Process Engineering Programme.

CSR AND SUSTAINABILITY

- NGC made a donation of lumber to the National Centre for Persons with Disabilities (NCPD) for use in its woodworking and craft programme. The lumber was the by-product of trees cleared during the Cascadura Phase I construction project, which facilitates onshore gas production from the Ortoire Block in South Trinidad. While delivering the Cascadura project, the company saw an opportunity to extend the life of felled trees by converting them into useful lumber, which could in turn be used to generate income.



- In an effort to help combat 'period poverty' and promote sustainability, NGC Green marked World Children's Day 2024 by donating 350 reusable sanitary napkins to children's homes and care organisations across Trinidad and Tobago. Beneficiaries included the Children's Authority, Raffa House in D'Abadie, Chickland Children's Home in Freeport, and Haven of Hope in Woodland.



TO REFLECT ON THE BEAUTY
THAT SURROUNDS US HERE
IN TRINIDAD AND TOBAGO

Fort King George, Scarborough, Tobago



